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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XX July 1, 1936 Number 12

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DOWNY MILDEW OF TOBACCO APPEARS IN KENTUCKY

The first report of the occurrence of downy mildew (Peronospora tabacina) on tobacco in Kentucky was received from E. M. Johnson, Assistant Plant Pathologist of the Kentucky Agricultural Experiment Station, who found the disease in seedbeds, Todd County, June 8. Dr. Johnson's diagnosis was verified by E. E. Clayton of the Division of Tobacco and Plant Nutrition.

Dr. Johnson's report was as follows:

"I am sending you some diseased tobacco plants affected with what I think is downy mildew. It has been extremely dry here for almost two months which may account for so little mycelial growth on the dead areas. By careful examination I found many conidiophores but rather few conidia. They seemed definitely of the Peronospora type.

"I have found this disease in five beds of dark fired tobacco, four at Allensville in Southern Todd County, and in one at Elkton ten miles from those at Allensville. In every case the disease was present only on large, tender plants growing in shaded areas of the beds. In four beds the damage was slight, probably less than 2 percent of the plants being affected and usually only those too large for transplanting. In one bed at Allensville at least 25 percent of the plants were affected.

"This, I believe, is the first report of downy mildew in Kentucky."

OBSERVATIONS ON TOBACCO BEDS IN WESTERN KENTUCKY

E. M. Johnson

Todd County:

Dark fire cured	99 beds (20,500 square yards) Wildfire (Bacterium tabacum) in 20 beds Angular leaf spot (Bacterium angulatum) in 2 beds Downy mildew in 5 beds.
Dark air cured	13 beds (2,400 square yards) Wildfire (Bacterium tabacum) in 9 beds Angular leaf spot (Bacterium angulatum) in 1 bed
Burley	17 beds (2,320 square yards) Wildfire (Bacterium tabacum) in 3 beds Angular leaf spot (Bacterium angulatum) in 4 beds Frogeye (Cercospora nicotianae) in 2 beds

Logan County:

Dark fire cured	28 beds (7,500 square yards) Wildfire (Bacterium tabacum) in 2 beds
Dark air cured	5 beds (900 square yards) Wildfire (Bacterium tabacum) in 3 beds
Burley	1 bed (100 square yards) No diseases observed

Christian County:

Dark fire cured	4 beds (800 square yards) No diseases observed
Burley	3 beds (500 square yards) Angular leaf spot (Bacterium angulatum) in 1 bed

Simpson and Caldwell Counties:

Dark fire cured	2 beds (800 square yards) Angular leaf spot (Bacterium angulatum) in 1 bed
Dark air cured	2 beds (200 square yards) No diseases observed
Burley	1 bed (200 square yards) Angular leaf spot (Bacterium angulatum)

Trigg County:

Dark fire cured	20 beds (6,000 square yards) Wildfire (Bacterium tabacum) in 2 beds

(Kentucky Agricultural Experiment Station, June 26.)

TOBACCO SEEDBED SURVEY IN WISCONSIN 1936

James Johnson

Plants were abundant and relatively early, about 50 percent of the crop being transplanted before June 10. The average temperature for May, the critical period for seedbeds in Wisconsin, was 6.4° above normal, but the rainfall was much below normal in the southern district, especially in Dane County. In the latter part of May, the plants in Dane County were unusually free from disease. Damping off (Pythium and Rhizoctonia) occurred

in small areas in some seedbeds, but not to a serious extent. Blackfire (Bacterium angulatum) was characteristically absent at this time. Following early June rains, however, this disease could be found in over 50 percent of the seedbeds. The disease was especially striking in a few seedbeds which were not cloth-covered during the season or at the time of the rains.

In the northern district (Vernon and surrounding counties), the rainfall was greater. An inspection on June 8 and 9 did not show any unusual prevalence of blackfire, presumably because the plants had outgrown an earlier period of infection. There was no doubt, however, that blackfire existed in over 50 percent of the seedbeds. Although not seen at the time, a heavy epidemic of "rust", probably blackfire, occurred in the field in this district in 1935.

Wildfire (Bacterium tabacum) was found on only three farms (Rock County). The disease has developed on these farms for several years in succession. In one seedbed a large percentage of the plants was killed out and the remaining plants were very heavily infected. A single inspection for wildfire on several other previously infested farms failed to indicate its presence. However, two of the above cases of wildfire were not discovered until the second inspection of the plant beds. (Division of Tobacco and Plant Nutrition).

DISEASES OF CABBAGE AND BEANS IN COPIAH COUNTY, MISSISSIPPI

Paul R. Miller

The cabbage acreage of Copiah County this season was approximately 3,800. (This information was supplied by G. H. Hales, County agent.) There were about 2,000 car loads shipped from this area. (R. G. Risser, local representative for the Bureau of Agricultural Economics, U. S. Department of Agriculture).

Due probably to the fact that the seed was planted several weeks earlier than usual, and the plants were consequently more mature when transplanted to the field, there was considerable loss due to the plants going to seed. To conserve the fertilizer which had been applied to these fields, the growers had cut all the seeded plants. The actual loss as determined by counts of cut plants made in representative fields was about 10 percent. In early April the growers estimated a loss of half the crop.

Rows selected at random from 65 fields, totaling about 600 acres, were thoroughly surveyed for diseases, and in addition several days were spent at the shipping points where the cabbage was packed and graded and inspected by federal inspectors preparatory to shipping. All of the inspectors have been very cooperative and helpful in saving diseased

specimens as well as a record of their abundance.

Of the 65 fields examined, 11 were found to have plants infested with root knot nematodes (Heterodera marioni) but only 2 seemed to have over 10 percent of the plants infested.

Black rot (Bacterium campestre) was found in 8 fields, varying in amount from a trace to 5 percent. This disease apparently did little damage as in only one field had the black rot been followed by soft rot (Bacillus carotovorus).

A considerable amount of black rot was observed at the packing sheds. In some cases it was causing just a few black specks in the cabbage stump, in others a complete ring, and not infrequently it extended into the leaf midrib and veins. In all cases where it was observed by the inspectors it was culled out.

What was thought to be Rhizoctonia bottom and head rot (Corticium vagum) was found in scattered amounts in 2 fields.

About 2 percent loss occurred in the fields observed at harvest time due to the heads bursting open. This bursting usually happens in the hands of the workmen.

Club root (Plasmodiophora brassicae), yellows (Fusarium conglutinans) and blackleg (Phoma lingam) were not observed.

Cabbage aphids and worms probably caused more damage than diseases as they were general and numerous in practically all fields observed, especially late in the season.

About eight days after the cabbage season opened the price dropped so low that the growers could not afford to harvest their crop, so beginning May 19 The Commodity Purchase Section of the A.A.A. bought at thirteen dollars per ton about 300 carloads which were distributed by the Federal Surplus Commodity Corporation through relief agencies in various states. It was thus intended that donations of cabbage to relief families would not conflict with its sale through regular commercial channels. Because all the growers wished to take advantage of this there was a long waiting line of wagon and truck loads of cabbage which stood for hours in the sun, thus causing considerable damage due to scald. In addition this cabbage was loaded in the cars in bulk, rather than in crates as usual. Doubtless heavy loss was sustained when the cars reached their destinations.

Bean Diseases

The approximate acreage of beans in Copiah County was 1,300 and from this there were about 300 car loads shipped from the two points, Crystal Springs and Hazlehurst.

Rows from 50 fields, comprising approximately 500 acres, were selected at random and surveyed for diseases. Samples from hampers at the shipping points were also inspected.

Bacterial blight (Bacterium phaseoli) was observed in 11 of the 50 fields, varying in amount from a trace to 90 percent of the plants. In only 3 fields did more than about 5 percent of the pods show this disease. It was frequently noted as the beans were being inspected at the cars but not in sufficient quantity to disqualify the lot for U. S. #1. In one field observed the source of seed was from two lots obtained from the local seed store. Twenty rows planted from one lot showed no sign of the disease, whereas the rows adjoining, planted from the other lot, showed about 75 percent blight. When this field was called to the attention of the owner he was well satisfied that the seed was the source of infection.

Mosaic (virus) was observed in 8 fields varying from a trace to 100 percent. One field of about two acres was found to be so severely infected early in the season that the production was probably cut 75 percent, as was observed later in the season. Mosaic seemed to be more prevalent on the green pod varieties than on the wax varieties.

Anthracnose (Colletotrichum lindemuthianum) was found in only 2 fields. In one field the pods were so badly infected that the grower did not think it worth his while to harvest the beans. In this case the grower (negro) had used his own seed taken from a field last year where he saw a few spots on the pods, he said, but thought they were insect lesions. Only a few specimens were found at the shipping point.

Rust (Uromyces phaseoli) was found in 3 fields. It was limited to the leaves and apparently did little damage.

Stem rot (Sclerotium rolfsii). Twenty percent of the plants were killed in a half-acre field in low sandy soil.

Soil rot (Rhizoctonia sp.) was generally observed in all fields in small amounts. This was more noticeable after rains and in places where the pods touched the damp soil. Soil rot was more frequently seen by the inspectors than any other fungous disease.

Root knot (Heterodera marioni) was found generally on plants growing in the sandy soils. In some fields it was severe enough to cause yellow, stunted plants which did not set pods.

An abnormality of unknown cause was observed generally on Bountiful (green flat pod variety), Valentines (green round pod) and more frequently on Sure Crop (wax variety) in several fields and also at the shipping point. The pods showed wavy bands and irregular areas of a mottled water soaked appearance. These symptoms remain until the pods are entirely mature and decay does not result. In some cases this trouble was abundant enough to remove a lot of beans from the U. S. #1 grade. Specimens have been submitted to Dr. Ramsey at Chicago and to the Bureau of Plant Industry at Washington.

MISCELLANEOUS DISEASE NOTES FROM MISSISSIPPI

Paul R. Miller

Scab (Cladosporium carpophilum) on peach was observed to be abundant in all orchards visited. In some cases the spots were so numerous on the fruit that they had coalesced to form one large lesion covering half of the fruit.

Only a trace of brown rot (Sclerotinia fructicola) was observed on peach. It has been unusually dry for the past three weeks in this region.

Scab (Cladosporium effusum) on pecan. June 10 I spent the day with Mr. Jack Milton, Plant Board Inspector of Jackson, Mississippi, scouting for diseases of pecans and peaches in Hinds and Rankin Counties. Scab was found on the leaves and twigs of Schley and Van Deman varieties. It was not seen on the nuts. The majority of growers in this region are resorting to top working (budding or grafting) their trees with the more resistant varieties such as Stuart and Moneymaker, and are thus reducing their loss from scab which has been destructive in the past.

Wilt (Fusarium niveum) on watermelon. Ten percent of the plants of the Tom Watson variety of watermelons was observed to be infected in a two-acre planting near Rockport.

Bacterial blight (Bacterium malvacearum) on cotton. Several cotton fields in the Delta region were examined last week. As high as 25 percent of the cotyledons were showing symptoms of angular leaf spot. Should weather conditions become favorable (wind-blown rain) with this source of inoculum, we could expect an epidemic of some importance.

Pine rust (Cronartium quercuum) has been observed to be severe on several species of pine and abundant on oaks in all localities of the State visited this year. In many cases pine trees of approximately four inches diameter have been killed by galls forming on the trunk. Seventy-six dead trees bearing large galls were counted in one wooded area near Kosciusko. It was noted generally present in the Coastal region also.

Leaf blister (Taphrina coerulescens) on Quercus spp. has been found to be generally abundant in Mississippi this year.

Anthracnose (Gnomonia veneta) was found to be severe on sycamore trees near Grenada.

Leaf spot (Microstroma juglandis) was found to be abundant on some hickory trees while adjacent trees were apparently free from it. This observation applies also to pecans. (Division of Mycology and Disease Survey).

APPLE DISEASES IN MARYLAND

Earnest A. Walker

On June 23 I made a survey trip to the apple growing section in Montgomery County. To my surprise, I find there is a heavy infection of apple scab (Venturia inaequalis) in this region. The varieties most severely attacked are Delicious and Stayman. Grimes Golden is badly infected also and Williams Early Red shows a slight to moderate amount on the fruit. There are many young scab spots developing on the fruit at this time and from the abundance of scab on the leaves, and with continued cold, moist weather, indications are for very badly scabbed fruit.

On June 20 I inspected apples in the fruit section of the Eastern Shore of Maryland and at that time found only a trace of scab, mostly on the leaves.

Reports from the apple growing section of Western Maryland are to the effect that apple scab is scarce this year.

I noticed very severe infection of cedar rust (Gymnosporangium sp.) on Grimes Golden apple leaves in the Montgomery County region. Several orchards around Ashton, Sandy Spring, and Rockville are so badly infected with cedar rust that the foliage appears yellow from a distance. This is the worst case of cedar rust I have seen in the State. (Maryland Agricultural Experiment Station, June 30).

LOW TEMPERATURE INJURY OF APPLE BLOSSOMS AND SCARCITY OF BLIGHT IN ARKANSAS IN 1936

H. R. Rosen

There is probably less blight (Bacillus amylovorus) appearing in the Ozarks of Arkansas this year than in any recent year for which there are authentic records. This is particularly true for apples, while for pears the relative frequency of late spring frosts, which result in destroying a very large proportion of the blossoms, is often followed by a marked reduction in the amount of blight. Out of some ten years of intensive investigations on this disease in this State, this is the first year that the writer has been unable to locate a single orchard in the two principal apple-growing counties in which the disease, as blossom blight or twig or limb blight, is not present in any significant amount. In most orchards that contain susceptible varieties, the disease is present merely as a trace or is entirely absent. Orchards around Fayetteville and Springdale in Washington County and around Rogers in Benton County are largely free from it and it is only around Bentonville in Benton County that the disease has been found in occasional orchards as more than a trace.

Coupled with the scarcity of blight, there is an exceedingly light crop of fruit, so light in fact that most growers are applying no sprays and some of them have resorted to picking and destroying the few remaining apples in order to reduce codling moth infestation.

The destruction of most of the apple crop was brought about by the low temperatures of April 2 and 3 when the blossoms in a majority of the orchards were in the cluster bud or pink stage. The temperature dropped as low as 20° F. in most of the fruit-growing area. In those orchards or parts of orchards where the blossom buds were retarded and had not advanced very far into the cluster bud stage, the resulting injury was proportionately lower, and this probably accounts for the larger percentage of survival in some of the orchards around Bentonville. As noted above, it is in occasional orchards around Bentonville that blight is present in any significant amounts, and it is noteworthy that such orchards, while showing more or less reduction in the crop, nevertheless have a relatively larger amount of fruit.

This correlation between the amount of blight and surviving fruit is assumed to be directly comparable to the observations of numerous investigators who have noted a relationship in both pear and apple orchards between blossom production and prevalence of disease. It has frequently been recorded that young trees or older ones which have not blossomed are not as likely to develop blight as trees which blossom profusely. Of

course, this does not necessarily mean that such trees are more resistant to the disease, but does suggest that owing to the greater receptivity of blossoms to infection compared with vegetative shoots, trees lacking blossoms are more apt to escape the disease, though this is by no means true in all cases.

A peculiar type of frost injury to apple blossom buds observed shortly after the injury occurred may be worth recording. This consisted of a severance or disjunction of the outermost five to seven layers of cells of receptacles and pedicels from the remainder of the tissues, appearing as a cleavage line when the material was sectioned, and allowing the peeling of these outer layers as one would peel a banana. Evidently the peripheral injury to the buds had not extended deeper than these outer layers. Even here the injury in many instances was so slight that at least some of the protoplasts remained alive and functioned in producing new cells or enlarging those present so that within one to two weeks after the cleavage, the outer layers in many instances apparently had grown and become connected to the underlying tissues. In those blossoms which had not suffered injury to the pistils and which had not abscissed shortly after the frosts, those outer receptacle and pedicel layers which had been loosened at first could no longer be peeled from the underlying parts.

So far as pears are concerned, it has previously been recorded (Pl. Dis. Rept. 20 No. 6, p. 115, April 1, 1936) that fully 95 percent of pear blossom buds suffered winter injury. The remainder were practically wiped out by the same frosts that so seriously reduced the apple crop. As on apples, there is very little blight on pears this year in the Ozarks of Arkansas. (Arkansas Agricultural Experiment Station).

CEREAL DISEASES IN THE SOUTHERN GREAT PLAINS AREA

TEXAS, OKLAHOMA, KANSAS: The writer has just returned from a trip through Oklahoma and Texas. A number of commercial fields of wheat as well as many experimental plots at several experiment stations were examined for rust. A very heavy infection of stem rust (Puccinia graminis) was observed at College Station, Texas. At Denton, in northern Texas, heavy infection was observed on part of the experimental material but on other seedings infection was very light. Occasional fields showed only traces. Near Gainesville, Texas, some fields showed a moderate infection on late plants around the edges but only traces in the middle of the fields. Between the Red River and Ardmore, Oklahoma, general fields of wheat showed only traces of both stem and leaf rust (P. rubigo-vera tritici) on May 25. No rust of any kind was observed on the short thin wheat of western and southwestern Oklahoma on May 23 and 24. At Stillwater, Oklahoma, on May 30, only traces of stem rust and leaf rust could be found.

Stem rust has been reported as occurring in traces in Chase County, Kansas, but no natural infection has been observed in the vicinity of Manhattan. In the writer's opinion the severe epidemic of 1935 is not to be repeated this year. There is no heavy concentration of inoculum in northern Texas and the stage of maturity of winter wheat is much more nearly normal than in 1935. Although average temperatures for May were slightly above normal at Manhattan, the very cool nights have been unfavorable for stem rust infection. Leaf rust is developing very rapidly and a uniform and heavy infection undoubtedly will occur.

Oats sown after the April freeze look exceptionally well in fields that are free from smut (Ustilago spp.). There is a decided scarcity of such fields in the Southern Plains area this year, however. Oat smut infection is extremely heavy throughout the entire area and many reports are being received indicating that infections run between 30 and 50 percent in some commercial fields. Many farmers are inquiring about the suitability of such a badly smutted crop being used for hay. Much of the oat crop will not be harvested for grain. (C. O. Johnston, Kansas Agricultural Experiment Station, June 3. From Cereal Courier 28:81-82. June 10, 1936.)

KANSAS: Dr. A. G. Johnson made a survey trip with Dr. Hurley Fellows through south-central Kansas.

In general, wheat was found to be in excellent condition in practically all of the area covered. Traces of loose smut of wheat (Ustilago tritici) were found throughout the area but no stinking smut (Tilletia spp.). Septoria leaf blight (S. tritici) was found nearly everywhere on wheat and black chaff (Bacterium translucens undulosum) was found to some extent at some locations. Take-all (Ophiobolus graminis) was found on a few farms, but in general, there is less this year than usual.

The most conspicuous cereal disease noted was oat smut (Ustilago spp.). This was unusually abundant almost everywhere. Some estimates were as high as 40 to 50 percent. One field near Wichita was reported as containing 95 percent smut but this field was not seen. (From Cereal Courier 28:76. June 10, 1936).

OTHER REPORTS ON CEREAL DISEASES

SEEDLING BLIGHT OF WHEAT IN MINNESOTA: A recent root rot survey made by Dr. R. H. Bamberg showed that wheat fields in several counties in western and northwestern Minnesota had from 5 to 40 percent infection of the seedlings from untreated seed, with brown discoloration of the roots. About half the fields examined were infected. Grain from treated seed was relatively free from seedling blight. (E. R. Ausemus, Minnesota Agricultural Experiment Station, June 3. From Cereal Courier 28:78. June 10, 1936).

BACTERIAL WILT OF SWEET CORN ON LONG ISLAND: Corn wilt (Aplanobacter stewarti) is present in the East Meadow section of Nassau County. There is about 4 percent on early varieties. (M. C. Richards, New York State College of Agriculture Weekly News Letter, June 22).

CROWN ROT OF ORNAMENTALS IN NEW JERSEY

Cynthia Westcott

A serious attack of Ajuga by crown rot caused by Sclerotium delphinii was observed in a rock planting in a garden at Short Hills on June 18, about ten days earlier than usual. The spread of the disease was stopped last year by the use of mercuric chloride and naphthalene flakes, but it has reappeared this year in the same place, as is usual with this fungus. Various Sedums intermingled with Ajuga in the planting were also attacked. The whole area is covered with mycelium and spores of the fungus.

The disease was observed at Montclair also, on Eupatorium on June 19 and on iris on June 22.

DISEASES OF ORNAMENTALS IN THE DISTRICT OF COLUMBIA

H. A. Edson

Winter killing of English ivy: Four of six ivy vines (Hedera helix) twenty years old were killed to the ground by the winter temperatures of 1935-36. Of these two started some growth activity from the old wood in the early spring but died back late in May. A fifth vine was killed outright and one apparently escaped injury. (June 20).

Rose diseases: Black spot (Diplocarpon rosae) is much in evidence in several gardens in the northwest section. (June 2).

Powdery mildew (Sphaerotheca pannosa) is rather general on climbers and many hybrid roses. (June 5).

Bacterial blight of mulberry (Bacterium mori): Blighted branches appeared on many terminal branches and twigs of a large mulberry tree at Rock Creek Church Road and Fifth Street N. W. (June 28). (Division of Mycology and Disease Survey).

A MOSAIC DISEASE OF PEACH IN KENTUCKY

W. D. Valleau

A mosaic has been found in a nursery row of peaches budded last summer. Two infected bud sticks were used, one resulting in five, the other in eleven, mosaic trees in succession. The remainder of the row and the block, which contains several varieties, appeared to be free from infection. The buds were from first-season budded trees in the nursery. (Kentucky Agricultural Experiment Station, June 27).

MOTTLING OR BREAKING IN DAME'S ROCKET IN OREGON

F. P. McWhorter

[NOTE: The disease of dame's rocket described by Dr. McWhorter in the following note seems to be very similar to the breaking in stock reported by C. M. Tompkins from California (Breaking in stock (Mathiola incana), a virosis. Abst. Phytopath. 24:1137. 1934). The symptoms on stock as described by Dr. Tompkins "consist of slight to severe stunting of the plant and complete or sectorial breaking of the flowers in the terminal racemes, resulting in a bleached, blotched effect of the undersized petals, occasional mottling of the leaves and reduction in size of the seed pods". The relation of the breaking in stock to a serious cauliflower virosis also reported by Dr. Tompkins which has been transmitted to cabbage, kale, and stock, had not been determined (A destructive virus disease of cauliflower and other crucifers. Abst. Phytopath. 24:1136-1137. 1934).

A photograph accompanying Dr. McWhorter's report showed clearly the blotching of the flowers and leaves. Dr. McWhorter's note follows.]

A very strong mottle mosaic of the cruciferous ornamental Hesperis matronalis was found in a garden in Oregon City. We have never observed a mottle in a crucifer which was quite so noticeable as this one. Healthy plants of this particular variety of H. matronalis have purple flowers. The flowers on diseased plants show a breaking similar to that of tulip break. The observation is of special interest since from time to time there have been serious outbreaks of mosaic diseases on crucifers, such as cabbage and cauliflower, in the vicinity of Oregon City. (Division of Fruit and Vegetable Diseases, June 8).